UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,711	07/30/2003	Yuka Utsumi	503.34972CX2	5363

20457 7590 07/27/2005

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER	
PARKER, KENNETH	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/629,711	UTSUMI ET AL.	
	Examiner	Art Unit	
	Kenneth A. Parker	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7-9,11-13 and 15-17* is/are rejected.

7)☒ Claim(s) *6,10,14 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3-5, 7-9, 11-13, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnishi 5089906 et al in view of Seong et al 5541750 and Kobayashi et al 4909604.

The reference shows regarding claim 3 A liquid crystal display apparatus comprising:

a liquid crystal panel;

a light source, but not explicitly that it is provided on a surface of said liquid crystal panel and further however lacks the following relationship :

wherein said liquid crystal panel is displayed in a double refraction mode, and has a characteristic of spectral transmittance required to satisfy the following equation, x > y > z, when a drive voltage is applied thereto, in the range of a minimum voltage required for a visual display on said liquid crystal panel to a maximum voltage,

"x" equals a value of the transmittance in said liquid crystal panel at a wavelength which corresponds to a longest wavelength in the range of wavelengths designated for blue light illuminated from said light source;

"y" equals a value of the transmittance in said liquid crystal panel at a wavelength which corresponds to a maximum value of the intensity in the range of wavelengths designated for green light illuminated from said light source; and 'Y" equals a value of the transmittance in said liquid crystal ' panel at a wavelength which corresponds to a maximum value of the intensity in the range of wavelengths designated for red light illuminated from said light source.

It was conventional to place the light source (interpreted to include all elements up to the lcd panel) directly against the LCD panel and therefore on it. This is evidenced by the reference Kobayashi et al 4909604 (shown in the cover figure). One of ordinary skill would have recognized that the reason to abut the elements was for small thickness. Therefore one or ordinary skill would have found reason, motivation and suggestion to modify the primary reference by abutting the light source and LCD as

shown by Kobayashi for the motivation of making the device thin which would have been recognized by those of ordinary skill.

Ohnishi discloses a device with a continuous downward slope from 440 nm to 700 nm for an on state (voltage applied) in an STN (which is a type of double refraction) mode. The values of the claim require the X to be the longest wavelength for blue of the backlight, and for z, the maximum intensity of the backlight of the range in red. Ohnishi is silent on the backlight intensity distribution. The secondary reference Seong et al discloses that light three peaks including one at each of 450, 550, and 650 (which would meet the claimed relation ship) of figure 2 was conventional (see column 2, brief description of the drawings). This would have had the advantage of being widely available as any conventional element would have, but also for meeting the design as shown in figure 4, which shows that the design values are set up for 450,550 and 650 (see column 9, lines 48-62), which show clearly that these three wavelengths were explicitly designed for. Therefore one of ordinary skill would have found reason, motivation and suggestion to employ a light source with peaks at 450,550 and 650, as was conventional at the time and as would have clearly met the explicitly disclosed design conditions.

The reference shows regarding claim 4 a liquid crystal display apparatus according to claim 3, however lacks the following relationship which is met in accordance with the modification by the secondary reference above: wherein the range of wavelengths designated for blue light illuminated from said light source corresponds

to 400 nm to 500 nm, the range of wavelengths designated for green light illuminated from said light source corresponds to 500 nm to 600 nm, and the range of wavelengths designated for red light illuminated from said light source corresponds to 600 nm to 700nm.

The reference shows regarding claim 5 a liquid crystal display apparatus according to claim 3, further comprising a pair of polarizer 5 and 1 arranged so as to sandwich a pair of substrates in said liquid crystal panel; and a birefringent film 2,4 arranged between a polarizer and a substrate (shown in figure 1).

The reference shows regarding claim 7 a liquid crystal display apparatus comprising:

a liquid crystal panel;

a light source, but not explicitly that it is provided on a surface of said liquid crystal panel and further however lacks the following relationship :

wherein said liquid crystal panel is displayed in a double refraction mode, and

has a characteristic of spectral transmittance required to satisfy the following equation, $x > y > z$, when a drive voltage is applied thereto, from a dark state to a light state, where: "x" equals a value of the transmittance in said liquid crystal panel at a wavelength which corresponds to a longest wavelength in the range of wavelengths designated for blue light illuminated from said light source,

"y" equals a value of the transmittance in said

liquid crystal panel at a

wavelength which corresponds to a maximum value of the intensity in the range of wavelengths designated for green light illuminated from said light source; and

"z" equals a value of the transmittance in said liquid crystal panel at a wavelength which corresponds to a maximum value of the intensity in the range of wavelengths designated for red light illuminated from said light source.

It was conventional to place the light source (interpreted to include all elements up to the lcd panel) directly against the LCD panel and therefore on it. This is evidenced by the reference Kobayashi et al 4909604 (shown in the cover figure). One of ordinary skill would have recognized that the reason to abut the elements was for small thickness. Therefore one or ordinary skill would have found reason, motivation and suggestion to modify the primary reference by abutting the light source and LCD as shown by Kobayashi for the motivation of making the device thin which would have been recognized by those of ordinary skill.

Ohnishi discloses a device with a continuous downward slope from 440 nm to 700 nm for an on state (voltage applied) in an STN (which is a type of double refraction) mode. The values of the claim require the X to be the longest wavelength for blue of the backlight, and for z, the maximum intensity of the backlight of the range in red. Ohnishi is silent on the backlight intensity distribution. The secondary reference Seong et al discloses that light three peaks including one at each of 450, 550, and 650 (which would meet the claimed relation ship) of figure 2 was conventional (see column 2, brief description of the drawings). This would have had the advantage of being widely

available as any conventional element would have, but also for meeting the design as shown in figure 4, which shows that the design values are set up for 450,550 and 650 (see column 9, lines 48-62), which show clearly that these three wavelengths were explicitly designed for. Therefore one of ordinary skill would have found reason, motivation and suggestion to employ a light source with peaks at 450,550 and 650, as was conventional at the time and as would have clearly met the explicitly disclosed design conditions.

The reference shows regarding claim 8 a liquid crystal display apparatus according to claim 7, however lacks the following relationship which is met in accordance with the modification by the secondary reference above:
wherein the range of wavelengths designated for blue light illuminated from said light source corresponds to 400 nm to 500 nm, the range of wavelengths designated for green light illuminated from said light source corresponds to 500 nm to 600 nm, and the range of wavelengths designated for red light illuminated from said light j source corresponds to 600 nm to 700nm.

The reference shows regarding claim 9 a liquid crystal display apparatus according to claim 7, further comprising a pair of polarizer 5 and 1 arranged so as to sandwich a pair of substrates in said liquid crystal panel; and a birefringent film 2,4 arranged between a polarizer and a substrate (shown in figure 1).

The reference shows regarding claim 11 a liquid crystal display apparatus comprising:

a liquid crystal panel;

a light source, but not explicitly that it is provided on a surface of said liquid crystal panel and further however lacks the following relationship :

wherein said liquid crystal panel is displayed in a double refraction mode, and has a characteristic of spectral transmittance required to satisfy the following equation, x > z, when a drive voltage is applied thereto in the range of a minimum voltage required for a visual display on said liquid crystal panel to a maximum voltage, where:

"x" equals a value of the transmittance in said liquid crystal panel at a wavelength which corresponds to a longest wavelength in the range of wavelengths designated for blue light illuminated from said light source', and "z" equals a value of the transmittance in said liquid crystal panel at a wavelength which corresponds to a maximum value of the intensity in the range of wavelengths designated for red light illuminated from said light source.

It was conventional to place the light source (interpreted to include all elements up to the lcd panel) directly against the LCD panel and therefore on it. This is evidenced by the reference Kobayashi et al 4909604 (shown in the cover figure). One of ordinary skill would have recognized that the reason to abut the elements was for small thickness. Therefore one or ordinary skill would have found reason, motivation

and suggestion to modify the primary reference by abutting the light source and LCD as shown by Kobayashi for the motivation of making the device thin which would have been recognized by those of ordinary skill.

Ohnishi discloses a device with a continuous downward slope from 440 nm to 700 nm for an on state (voltage applied) in an STN (which is a type of double refraction) mode. The values of the claim require the X to be the longest wavelength for blue of the backlight, and for z, the maximum intensity of the backlight of the range in red. Ohnishi is silent on the backlight intensity distribution. The secondary reference Seong et al discloses that light three peaks including one at each of 450, 550, and 650 (which would meet the claimed relation ship) of figure 2 was conventional (see column 2, brief description of the drawings). This would have had the advantage of being widely available as any conventional element would have, but also for meeting the design as shown in figure 4, which shows that the design values are set up for 450,550 and 650 (see column 9, lines 48-62), which show clearly that these three wavelengths were explicitly designed for. Therefore one of ordinary skill would have found reason, motivation and suggestion to employ a light source with peaks at 450,550 and 650, as was conventional at the time and as would have clearly met the explicitly disclosed design conditions.

The reference shows regarding claim 12 a liquid crystal display apparatus according to claim 11, however lacks the following relationship which is met in accordance with the modification by the secondary reference above:

wherein the range of wavelengths designated for blue light illuminated from said light source corresponds to 400 nm to 500 nm, and the range of wavelengths designated for red light illuminated from said light source corresponds to 600nm to 700nm.

The reference shows regarding claim 13 a liquid crystal display apparatus according to claim 11, further comprising a pair of polarizer 5 and 1 arranged so as to sandwich a pair of substrates in said liquid crystal panel; and a birefringent film 2,4 arranged between a polarizer and a substrate (shown in figure 1).

The reference shows regarding claim 15 a liquid crystal display apparatus comprising:

a liquid crystal panel;

a light source, but not explicitly that it is provided on a surface of said liquid crystal panel and further however lacks the following relationship :

wherein said liquid crystal panel is displayed in a double refraction mode, and has a characteristic of spectral transmittance required to satisfy the following equation, $x > z$, when a drive voltage is applied thereto, from a dark state to a light state, where:

"x" equals a value of the transmittance in said liquid crystal panel at a wavelength which corresponds to a longest wavelength in the range of wavelengths

designated for blue light illuminated from said light source; and "z" equals a value of the transmittance in said liquid crystal panel at a wavelength which corresponds to a maximum value of the intensity in the range of wavelengths designated for red light illuminated from said light source.

It was conventional to place the light source (interpreted to include all elements up to the lcd panel) directly against the LCD panel and therefore on it. This is evidenced by the reference Kobayashi et al 4909604 (shown in the cover figure). One of ordinary skill would have recognized that the reason to abut the elements was for small thickness. Therefore one or ordinary skill would have found reason, motivation and suggestion to modify the primary reference by abutting the light source and LCD as shown by Kobayashi for the motivation of making the device thin which would have been recognized by those of ordinary skill.

Ohnishi discloses a device with a continuous downward slope from 440 nm to 700 nm for an on state (voltage applied) in an STN (which is a type of double refraction) mode. The values of the claim require the X to be the longest wavelength for blue of the backlight, and for z, the maximum intensity of the backlight of the range in red. Ohnishi is silent on the backlight intensity distribution. The secondary reference Seong et al discloses that light three peaks including one at each of 450, 550, and 650 (which would meet the claimed relation ship) of figure 2 was conventional (see column 2, brief description of the drawings). This would have had the advantage of being widely available as any conventional element would have, but also for meeting the design as shown in figure 4, which shows that the design values are set up for 450,550 and 650

(see column 9, lines 48-62), which show clearly that these three wavelengths were explicitly designed for. Therefore one of ordinary skill would have found reason, motivation and suggestion to employ a light source with peaks at 450,550 and 650, as was conventional at the time and as would have clearly met the explicitly disclosed design conditions.

The reference shows regarding claim 16 a liquid crystal display apparatus according to claim 15, however lacks the following relationship which is met in accordance with the modification by the secondary reference above:
wherein the range of wavelengths designated for blue light illuminated from said light source corresponds to 400 nm to 500 nm, and the range of wavelengths designated for red light illuminated from said light source corresponds to 600 nm to 700nm.

The reference shows regarding claim 17 a liquid crystal display apparatus according to claim 15, further comprising a pair of polarizer 5 and 1 arranged so as to sandwich a pair of substrates in said liquid crystal panel; and a birefringent film 2,4 arranged between a polarizer and a substrate (shown in figure 1).

Allowable Subject Matter

Claims 6, 10, 14 and 18 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The reason for the indication of the allowable subject matter was the claimed relationship combined with the parallel electric field.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth A. Parker whose telephone number is 571-272-2298. The examiner can normally be reached on M-F 10:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kenneth A Parker
Primary Examiner
Art Unit 2871